

REMARKS

Claims 1 and 4 have been amended to include the transitional phrase "comprising" and to more positively claim the subject matter being claimed in this case; namely, "a sewing thread" and a "sewn fabric article having sewn seams."

In the above Office Action, the Examiner rejected claims 1-3 under 35 U.S.C. §102(b) for being anticipated by U.S. patent publication No. 2003/0136099 to Hietpas et al., hereafter Hietpas.

The present invention provides a sewing thread that is excellent in stretchability and also lock stitch sewing performance.

As disclosed in a background art of the application, a sewing thread formed out of a poly(trimethylene terephthalate) multifilament yarn is excellent in seam stretchability, and is a very excellent one for sewing a fabric having a particularly high stretchability.

However, a sewing thread high in seam stretchability cannot be used in a high speed sewing machine due to the small loop formation of the needle thread. In other words, good seam stretchability and high speed sewing performance are inconsistent with each other. Therefore, it is very difficult to satisfy both properties at a high level, on the basis of conventional technical techniques.

The present invention solves these problems by providing a sewing thread that is excellent in both stretchability and high speed sewing.

Hietpas provides a spun yarn having high stretch characteristics. Hietpas discloses that the spun yarn can be used in a woven fabric and a knitted fabric, but it does not disclose its use as a sewing thread or the problem that arises in providing a

sewing thread that satisfies both seam stretchability and sewing performance at a high level.

The present invention, as set forth in claim 1, relates to a sewing thread containing 30% by weight or more of poly(trimethylene terephthalate) -based staple fiber, and having a breaking elongation of 30 to 100% and an instantaneous elastic recovery at 5% elongation of 30 to 75%.

The present inventors investigated in detail the relationship between the seam formation mechanism and various elongation properties of a sewing thread and the factors affecting this relationship. As a result, the present inventors found that a breaking elongation greatly contributes to imparting stretchability to the seams, and that an instantaneous elastic recovery in a low elongation region greatly contributes to a sewing performance. That is, the present inventors have found that suppression of the instantaneous elastic recovery makes the loop formation stable, and as a result, the effect thereof is fully exhibited especially during high speed sewing.

In the above, it is to be noted that the claimed breaking elongation and instantaneous elastic recovery at 5% elongation in claim 1 are not properties of a spun yarn, but properties of a “sewing thread.”

Like Hietpas, the sewing thread of the present invention contains a poly(trimethylene terephthalate) -based staple fiber. However, the staple fiber of a spun yarn like Hietpas has an instantaneous elastic recovery at 5% elongation of 70 to 100%. See page 17, line 8 of the specification. Note that this is a characteristic of a “spun yarn” that can be used to form the sewing thread of the present invention, not the “sewing thread” claimed. See next paragraph. This range exceeds the claimed value of

30 to 75% of the instantaneous elastic recovery at a 5% elongation of the sewing thread as defined in the present claim 1. That is, a spun yarn alone is not acceptable as a sewing thread, because the instantaneous elastic recovery at 5% elongation is too high for high speed sewing. See page 17, lines 27-31 of the specification.

The sewing thread of the present invention can be produced by doubling and twisting spun yarns, and then by wet heat treating the resultant yarn at 90°C or more under a relaxed state.

Accordingly, the specific properties (the claimed breaking elongation and instantaneous elastic recovery at 5% elongation) of the sewing thread of the present invention are obtained by the above specific production process, and these properties are different from the inherent properties of a spun yarn of a poly(trimethylene terephthalate) -based staple fiber.

On the other hand, Hietpas relates to a spun yarn composed of cotton, PET (poly(ethylene terephthalate)) and PTT (poly(trimethylene terephthalate)). The spun yarn is similar to the sewing thread of the present invention only because it includes a poly(trimethylene terephthalate) staple fiber content of 30% or more.

However, regarding the properties, Hietpas only discloses a tenacity-at-break of the bicomponent staple fiber, crimp properties (CI, CD) of the tow, a stretch ratio and a recovery ratio (at 60 minutes after removing a weight) of the fabric. The reference does not disclose a breaking elongation and an instantaneous elastic recover at 5% elongation of a spun yarn.

Thus even if a sewing thread is formed of the spun yarn of Hietpas, it is clear that the thread would not satisfy the features set out in claim 1.

For these reasons, it is submitted that claims 1-3 cannot be considered to be anticipated by Hietpas, and its withdrawal as a ground of rejection under §102(b) is requested.

Claims 4 and 5 were rejected under 35 U.S.C. §103(a) for being obvious over Hietpas. However, since these claims depend from claim 1, and it is believed claim 1 is patentable over Hietpas for the above reasons, it is submitted claims 4 and 5 should be patentable over this reference for the same reasons.

It is believed claims 1-5 are in condition for allowance.

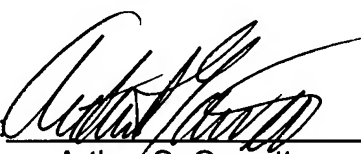
In view of the foregoing amendments and remarks, Applicants respectfully request reconsideration and reexamination of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our Deposit Account 06-0916.

Respectfully submitted,

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